

REMARKS

Claims 1 through 18 are pending in the application. Claims 1-18 are rejected. A Request for a Three Month Extension is enclosed herewith. Reconsideration and allowance of all pending claims are requested in view of the remarks below.

As a preliminary matter, to show that rod-type wrenches are very well known to one of ordinary skill in the art, Applicants enclose copies of U.S. Patent Nos. 3,646,837 and 4,993,288, as well as excerpts of German publications 2 020 503 and 26 26 493 and a full copy of the related U.S. family member, U.S. Patent No. 3,987,692, to German publication 26 26 493.

Objections to the Specification

The specification is objected to under 37 CFR § 1.71. Specifically, page 9 lines 21-24 and 35-36 are not understood by the Examiner. Applicants note that the specification contains a typographical error at page 9, line 20. The numeral 8 on line 20 for the output shaft is incorrect. The proper element number is 4 as can be seen from the same paragraph as well as from the two paragraphs further above. Applicants believe that correction of this typographical error clarifies this portion of the specification and overcomes the objection.

Page 9, lines 35 to 36, are also not understood by the Examiner. Applicants traverse this objection in view of the following comments. The present invention incorporates two devices. First device: a motor driven wrench which includes the parts 2, 3 and 4, see Figure 1 of the present application. Such wrench includes a first built-in torque limiter and acts upon output shaft 4. Second device: an additional, second torque limiter which includes parts 10, 11 and 15, and which also acts upon output shaft 4, see Figures 1 and 2.

Output shaft 4 serves as a drive shaft to turn a screw, and simultaneously

output shaft 4 forms the swivel axis or turning axis or pivot axis for the support 15. Support 15 moves relative to spring 10 or relative to the housing 3 of head 1 when a certain torque is reached. This means that the axis around which support 15 moves, is the "torque limited axis" in the sense of the present application. This axis is the same axis around which output shaft 4 rotates.

For purposes of illustration only, a contrast of the concept described above can be seen from U.S. Patent No. 2,512,032, copy enclosed. The torque-limited shaft there has the numeral 12. Around this shaft a head 14 of the manual wrench can be turned or swiveled when a certain torque is reached. The turning axis of a nut N however is distanced from the torque-limited shaft 12. The turning axis of nut N of this '032 patent is comparable to the output shaft 4 of the present application since the axis of the output shaft 4 is identical with the turning axis of the nut or bolt or screw to be tightened.

In the '032 patent, the distance between the turning axis of the nut N and the torque-limited axis 12 will lead to different results if the wrench is gripped by the operator at different locations of the wrench. Especially if the wrench is gripped with both hands, it cannot be assured that the hands are only placed at the handle area 30. Using the handle 30, however, is necessary because the calculation of the torque, which can be adjusted, is based upon the different levers between firstly handle 30 and torque-limited axis 12 and secondly between turning axis of the nut N and the torque-limited axis 12.

This applies especially when, instead of the construction of the '032 patent, an articulation is used as shown in the present application, namely with a stick-like articulating body 9 between two seats. Such wrenches with such an articulating function are known to somebody skilled in the art, e.g. by the German manufacturer Hazet.

A proposed drawing correction is submitted herewith to include element number 9 in Figure 2. Support is provided in Figure 1.

Page 10, lines 4-7, is also not understood by the Examiner. Applicants traverse this objection in view of the following comments. U.S. Patent Nos. 3,369,421 and 4,287,795 (copies enclosed) show motor-driven wrenches with flat output means. With flat output means, the bolt axis is usually near the tip of the flat output means (see no. 36 in patent '421 and no. 72 in patent '795) and therefore distanced from the drive shaft axis (see no. 48 in patent '421 and no. 32 in patent '795).

Page 10, lines 20 and 21, is also not understood by the Examiner. Applicants traverse this objection in view of the following comments. Applicants note that the German word "Schaft" is translated here by the English word "shaft". In German, "Schaft" means an elongate element, not necessarily an element, which can be turned along its longitudinal axis. Applicants note that the "shaft 2" set forth in the specification is not an element that rotates about its longitudinal axis. In tools, a "Schaft" can be, for example, the long wooden handle of an axe which extends from where you grip it to the axe's iron head. Alternatively, the "Schaft" can be, for example, the wooden part of a rifle which you press against your shoulder.

"Shaft 2" designates a housing of the rod-type motor driven wrench, such housing usually not only surrounding the motor but simultaneously providing the handle of the tool. This "shaft 2" is comparable to the housing 12 in U.S. Patent No. 4,287,795 (enclosed), see column 2, line 57, concerning housing/handle. Applicants submit that such rod-type motor driven wrenches are well known in the art

In U.S. Patent No. 3,646,837 (copy enclosed) the head (see Figure 3B, element 10) bearing the two beveled gears (elements 27 and 28) is mounted directly onto the motor housing

(12) which is comparable to "shaft 2" of the present application. As can be seen from Figure 1 of the present application, in an embodiment of the invention, the head 1 is not directly mounted onto such housing "shaft 2", but there is an intermediate element, namely adapter 12, which connects on one side to the housing "shaft 2" and on the other side to the head 1 of the tool.

Applicants enclose a copy of a drawing, labeled Illustration A, with additional notations that would be apparent to one of ordinary skill in the art upon review of Figure 1 of the present application. According to an embodiment of the invention, the ball bearing can be seen in Figure 1 which indicates that the internal parts of the adapter 12 are rotatable. These internal parts comprise a tube into which extend at least two elements: one element coming from the motor, and another element leading to one of the two beveled gears in the head 1. These two elements are fixed to the tube by a feathered key each, as illustrated in Figure 1.

The Examiner asserts that the specification lacks reference numeral "11" as set forth in the drawings. The Examiner is directed to page 9, line 15, of the specification, reciting a "setscrew 11."

In view of the above remarks, Applicants submit that the specification of the present application, as filed, enables any person of ordinary skill in the relevant art to make and use the invention. The references cited herein are intended to illustrate aspects of the knowledge of such a person, while Illustration A is provided merely for the Examiner's convenience. In summary, Applicants assert that the objection to the specification under 37 CFR § 1.71 is overcome.

Claim Rejections 35 U.S.C. § 112, First Paragraph

Claims 1-18 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the

art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The Examiner asserts that the structure and operation of the motor driven manual wrench has not been clearly set forth in view of the specification and drawings. Specifically, the Examiner asserts that the structure of the articulated joint "8", the articulated body "9", the adapter "12", the spring "10", the motor, the torque limiter, the structure of the motorized portion of the device, the cooperation between the manual and motorized portions of the device, and the operation of the each of the above listed elements has not been clearly defined to enable an understanding of the invention. Applicants traverse this rejection.

Applicants submit that the structure of the articulated joint 8, the articulated body 9 and the spring 10 (i.e.: the torque limiter) is clear to somebody of ordinary skill in the art. U.S. Patent No. 2,512,032 (copy enclosed) shows a spring-biased seat 25, which is pressed by the spring against an articulated body 14. In Figure 3 of this '032 patent, such body 14 is in-line with the longitudinal axis of the wrench. In Figure 1 of this '032 patent, such articulated body 14 has been articulated by applying a torque on the nut N. It can be seen that in such an articulated arrangement, the seat 25 is pressed a little bit deeper into the housing of the wrench.

The articulated body 9 of our present application works similarly. Applicants enclose a purely schematic drawing for purposes of illustration, labeled Illustration B, with two images which are similar to Figure 2 of the present application. They show the wrench in the in-line and in the articulated arrangement. Spring 10 is applying pressure against a seat, designated "S" in Illustration B, for the articulating body 9.

Illustration B shows that support 15 can turn around the same axis around which output shaft 4 is turning. While the first seat for the first end of articulating body 9 is designated "S" in

Illustration B, the seat for the second end of the articulating body 9 is provided by the support 15 which has its name from supporting this second end which is pressed against such support.

Applicants submit that the cooperation between the motorized and manual parts is clear to somebody of ordinary skill in the art. The motor-wrench is equipped with a built in torque-limiter, e.g. a pneumatic valve if the wrench motor is driven by compressed air, such valve cutting off the power supply to the output shaft 4, e. g. by blowing off, if a certain torque is reached. In a first step of operation, a screw may be tightened by the motor driving the output shaft 4 via the two beveled gears.

Using, in a second step of operation, the wrench as a manual wrench, the power flows through the housing "shaft 2" (which simultaneously also is the handle) of the rod-type wrench, through the seat "S" of the torque-limiter, through the articulating body 9, through support 15 and through ratchet drive 6 which is driving the output shaft 4. Applicants note that the power flow / torque flow through the motor drive, through the adapter 12 and through the geared wheels in head 1 is cut because the torque limitation of the motor drive is activated and because the torque to be applied manually in the second step of operation is greater than the torque applied by the motor in the first step of operation.

When the torque during manual operation is high enough to tilt the joint 8, support 15 gets out of alignment with articulating body 9, spring 10 and shaft 2, as illustrated in the enclosed drawings.

In view of the above remarks, Applicants submit that the subject matter of claims 1-18 is described in the specification, as filed, in such a way as to enable one skilled in the relevant art to make and/or use the invention. The references cited herein are intended to be examples of aspects of the knowledge of such a person, while Illustration B is provided merely for the

Examiner's convenience. In summary, Applicants assert that the rejection of claims 1-18 under 35 U.S.C. § 112, first paragraph, is overcome.

Claim Rejections 35 U.S.C. § 112, Second Paragraph

Claims 1-18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention. Applicants traverse this rejection.

The Examiner asserts that in claim 1, "motor-driven manual wrench" appears contradictory. Applicants direct the Examiner's attention to page 1, lines 5-7, of the specification explaining that the terminology corresponds to that used in practice.

Applicants have amended claim 1 to overcome the remaining issues identified by the Examiner.

In line 1 of claims 2-18 "Manual wrench" has been changed to "motor-driven manual wrench" in order to clarify antecedent basis to claims from which claims 2-18 depend. The relationship between the head and the wrench of line 2 has also been clarified in response to the Examiner's remarks.

The Examiner asserts that claims 2-3,7-12,14-16 are not clearly supported (structurally and operationally) by the specification and drawings. In reply, Applicants reference the remarks herein concerning various aspects of these claims. Furthermore, Applicants assert that the specification and drawings sufficiently enable one of ordinary skill in the art to make and use the invention.

Claims 3 and 4 have been amended to clarify antecedent basis of the "drive shaft."

Lines 3-7 of claim 6 are not understood by the Examiner in view of the specification and drawings. Applicants note the extensive remarks above relating to elements of an embodiment of the invention recited in lines 3-7 of claim 6.

In claim 10, lines 3, the Examiner asserts that the alternative phraseology is vague and indefinite since the scope cannot be determined. Applicants submit that clarifying amendments to claim 10 overcome this rejection.

Claim 11 has been amended to clarify antecedent basis for the “electronic circuit” and the “display.”

In claim 14, “a flat” output element is not understood. Applicants note the remarks above relating to a flat output element.

Parallel Patent Examination Procedures

Applicants note that the present application has met the formal requirements of the Patent Cooperation Treaty.

Applicants note that Article 27 (1) of the Patent Cooperation Treaty states that “No national law shall require compliance with requirements relating to the form or contents of the international application different from or additional to those which are provided for in this Treaty and the Regulations.” Furthermore, Article 27 (5) provides “...any Contracting State is free to apply, when determining the patentability of an invention claim in an international application, the criteria of its national law in respect of prior art and other conditions of patentability not constituting requirements as to the form and contents of applications.” (emphasis added)


In summary, no objections to clarity, content or enablement have been raised by the International Searching Authority, and it has been deemed that the clarity, content and enablement requirements fully comply with the articles of the PCT.

Conclusion

In view of the remarks set forth above, it is respectfully submitted that this application is in condition for allowance. Accordingly, allowance is requested. If there are any remaining issues or the Examiner believes that a telephone conversation with the Applicants' attorney would be helpful in expediting prosecution of this application, the Examiner is invited to call the undersigned at (617) 227-7400.

Respectfully submitted,

LAHIVE & COCKFIELD, LLP

By: 

David J. Ridders

Registration No. 43,882

Attorney for Applicants

28 State Street
Boston, MA 02109
(617) 227-7400
(617) 742-4214
Dated: **February 11, 2002**

VERSION WITH CHANGES SHOWN

IN THE CLAIMS:

Please amend the claims as follows.

1. (Twice Amended) ^{A comb} Motor-driven manual wrench having a drive motor and a head having an output tool shaft for coupling to [that has the driving tool or a receptacle for] a driving tool, said wrench comprising

a ratchet drive located in the head and a first torque limiter [attached] coupled to the ratchet drive and a second torque limiter coupled to the drive motor such that the [manual] wrench forms a manually operable torque wrench whose transmittable torque is determined by the first torque limiter.
2. (Twice Amended) The motor-driven manual wrench according to claim 1, wherein the head is [mounted replaceably] removably coupled [on the wrench] to the drive motor.
3. (Twice Amended) The motor-driven manual wrench according to claim 1, further comprising an adapter [(12)] which is connected to [the] a drive shaft of the head and to an output shaft of the motor.
4. (Twice Amended) The motor-driven manual wrench according to claim 1, wherein the head is designed as an angle head having [an] said output tool shaft offset relative to [the] a drive shaft of the head.

5. (Twice Amended) The motor-driven manual wrench according to claim 1, wherein the first torque limiter is designed to be adjustable such that the transmittable tightening torque is adjustable to specified values.

6. (Twice Amended) The motor-driven manual wrench according to claim 1, wherein the first torque limiter has an articulated joint with an articulated body held between [two supports] a first support and a second support, [one] said first support being pivotably mounted at a distance from the articulated body, said [one] second support enabling an articulating motion between the first support and the articulated body, said [one] first support having a pivot axis coinciding with an axis of a shaft whose transmittable torque is limited by the torque limiter.

7. (Twice Amended) The motor-driven manual wrench according to claim 1, further comprising a visual display which is activatable when a specified tightening torque is obtained.

8. (Twice Amended) The motor-driven manual wrench according to claim 7, wherein the display is mechanically activatable.

9. (Twice Amended) The motor-driven manual wrench according to claim 1, further comprising an electrical sensor which generates a signal when a specified tightening torque is obtained.

10. (Twice Amended) The motor-driven manual wrench according to claim 9, further comprising an electronic circuit which is effectively connected with the sensor, the circuit activating [an] at

least one of an acoustic [display] signal and a visual display when the predetermined number of driving operations implemented with a specified tightening torque is obtained.

11. (Twice Amended) The motor-driven manual wrench according to claim 9, wherein [the] an electronic circuit activates at least one of [the displays] an acoustic signal and a visual display when a signal is received from the sensor.

12. (Twice Amended) The motor-driven manual wrench according to claim 8, wherein the display is located at the head.

13. (Twice Amended) The motor-driven manual wrench according to claim 1, wherein the [manual] wrench is configured as an elongate rod-type wrench.

14. (Twice Amended) The motor-driven manual wrench according to claim 1, wherein the head further comprises a flat output element coupled to the output tool shaft.

15. (Twice Amended) The motor-driven manual wrench according to claim 1, further comprising a wireless power supply for the motor.

16. (Twice Amended) The motor-driven manual wrench according to claim 1, further comprising a tubular housing accommodating the motor and [a drive train] an output shaft of the motor, said housing is designed with high bending strength, which bending strength during manipulation of the wrench allows for the transmission of considerably higher tightening torques to the [driving

operation] output tool shaft than from the motor drive, with the rod-shaped housing having a grip area for manual actuation of the [manual] wrench.

17. (Twice Amended) The motor-driven manual wrench according to claim 16, wherein the housing is formed of metal.

18. (Twice Amended) The motor-driven manual wrench according to claim 17, wherein the metal is light metal.

IN THE SPECIFICATION:

On page 9, lines 19 to 23, please change the existing paragraph as follows.

Support 15 is mounted to pivot around a pivot axis that coincides with the axis of output shaft [8] 4. Articulated body 9 can perform the articulating motion through the pivotal motion of said support 15. Because the pivot axis of support 15 coincides with output shaft 4 limited in its transmitted torque, a lever arm between a pivot axis of support 15 and this torque-limited shaft is obviated.

IN THE FIGURES:

A proposed drawing correction to Figure 2 is enclosed with a proposed change to add element number "9" illustrated in red.